DEPLETION OF INTERCONNECTED SURFACE WATER: PROPOSED SIGNIFICANT AND UNREASONABLE STATEMENT AND MINIMUM THRESHOLDS

Presented to Santa Margarita Groundwater Agency

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Balance Hydrologics

Outline

- Draft Significant and Unreasonable
- Approach for Minimum Threshold

Conceptual Process Flow Chart

1. GDEs	Identify potential GDEs
2. Interconnected	Identify interconnected surface waters and GDEs influenced by pumping
3. Priorities	Select priority species and habitats
4. Depletion	Quantify depletion and impacts to GDEs from groundwater pumping
5. Define	Define Significant and Unreasonable and decide if we are currently experiencing those conditions
6. Set	Set minimum threshold and measurable objective

SIGNIFICANT AND UNREASONABLE DEPLETION OF INTERCONNECTED SURFACE WATER

Summary of Comments from Board on Significant and Unreasonable Depletion of interconnected Surface Water

- Balance human and environmental uses of groundwater
- Consider priority species
- Consider critical habitat
- Consider financial impacts
- Consider impacts on and viability of GDEs

During the last meeting we looked at examples of significant and unreasonable statements. This is a summary of the feedback we got during and after the last meeting. Staff used this input to create a draft statement.

Draft Statement: Significant and Unreasonable Depletion of Interconnected Surface Water

Depletion of interconnected surface water occurs where interconnected surface water is depleted due to GSP implementation and/or groundwater use. To be considered significant and unreasonable, the depletions must cause significant adverse impacts to the viability of individual priority species or GDEs or undue financial burden to beneficial users or uses of the surface water.

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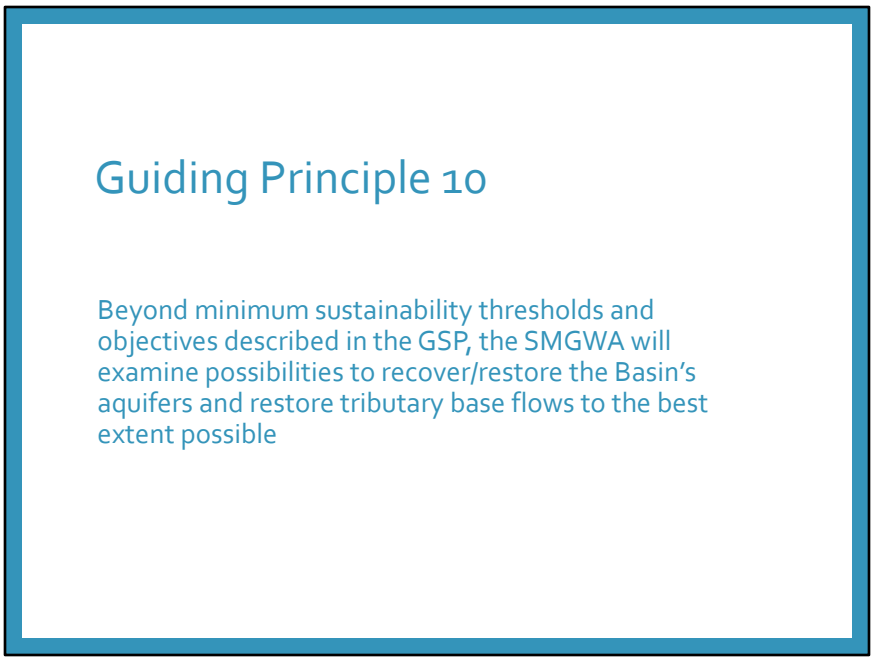
Comments from Surface Water Technical Advisory Group

- Statement replaces vague notion of "significant and unreasonable" with "significant and undue"
- "Undue" should be removed or more clearly defined
- Statement could be more aspirational. For example: "To be considered significant and unreasonable, the depletions must cause undue financial burden to beneficial users or uses of the surface water, or significantly reduce the likelihood of recovery of historic populations of one or more priority species"

We shared this statement with the Surface Water Technical Advisory Group. Based on this feedback do you want to incorporate any changes to the statement?

APPROACH FOR MINIMUM THRESHOLDS

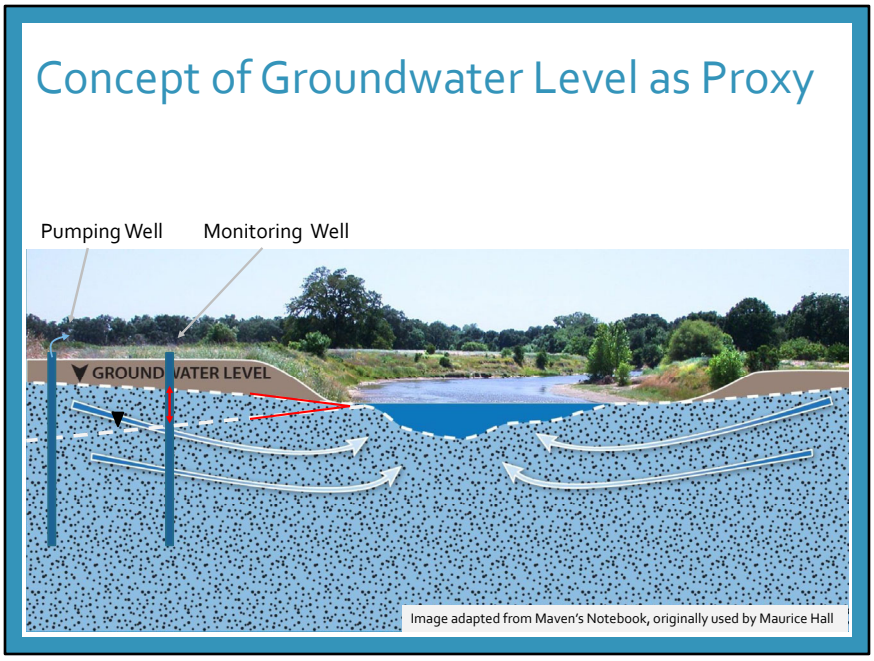


One of the guiding principles of SMGWA is to restore and recover baseflows within the basin.

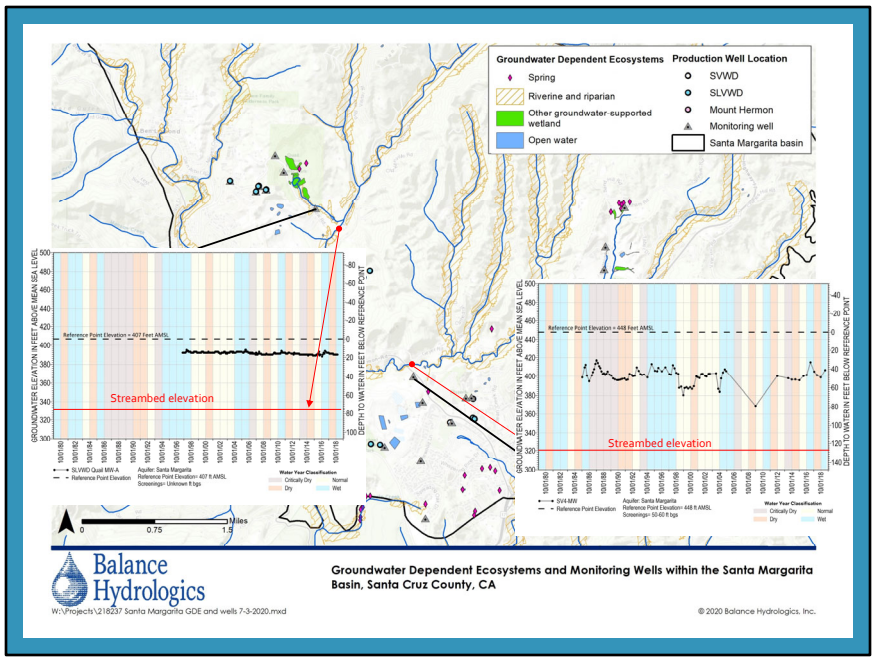
Groundwater level as Proxy

- Limited historic streamflow data exists for basin
- Difficult to quantify streamflow depletion caused by groundwater use because many factors contribute to streamflow
- Use groundwater levels within proximity of GDEs to monitor how the gradient of flow towards GDEs changes over time
  - Lowered groundwater levels results in lower flow gradient and lower discharge to GDE

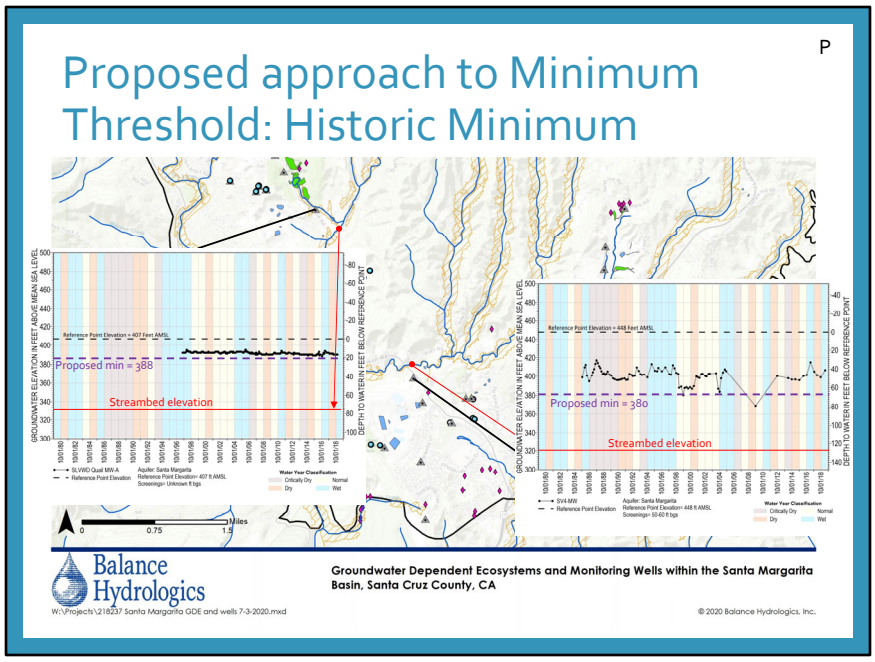
Due to the limited historic streamflow data within the basin and the difficulty in quantifying streamflow depletion caused by groundwater because of the many factors that contribute to streamflow (rainfall/runoff, surface water management, evapotranspiration, etc) we are going to use groundwater level as a proxy for this indicator. Monitoring groundwater levels near GDEs allows us to monitor the changes in the gradient of flow towards the GDE over time. For example, if groundwater levels are lowered then the gradient of flow is lower and there is less groundwater discharging to a GDE.



To use groundwater level as a proxy, we ideally want to have the monitoring well in between a pumping well and a GDE. We can then monitor the changes in the groundwater level. As the gradient of flow towards the GDE changes the groundwater contribution to GDEs changes.



To use groundwater elevation as a proxy we need to show that there is a correlation between groundwater level and interconnected streamflow. We can look at groundwater levels from existing monitoring wells and compare the groundwater elevation to the elevation of a nearby streambed or GDE. If the groundwater level is higher than the streambed, then groundwater is contributing to streamflow. Changes in groundwater elevation will directly relate to groundwater contribution to streams.



We propose to use the historic minimum for the period of record for the minimum threshold

At SLVWD Quail MW-A the historic record is very consistent. The historic minimum was 388 ft in November 2016. The difference between the highest and lowest levels is 7 ft.

At SV4-MW the lowest point was in 2009. This point was the only measurement over a 7-year span and was approximately 11 feet lower than any other recorded point. We suggest not using this point as the minimum since there is no other data to support the lowered level. Aside from the point in 2009, the lowest measured groundwater level was 380 ft in September 2009. A comparable level was also measured in October 2004. We evaluated streamflow from the historic UGSG gage Bean Creek at Mt Hermon Rd during 1999 and 2004 and found that the baseflow during both those years was normal, suggesting that those lower groundwater levels did not substantially impact the groundwater discharge within the reach.

NEXT STEPS

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- Refine Significant and Unreasonable Depletion of Interconnected Surface Water
- Refine Minimum Threshold
- Develop Undesirable Result
- Set Measurable Objective

QUESTIONS AND COMMENTS